

**DEVELOPMENT AND IMPLEMENTATION EDUCATIONAL AIDS OF THE  
SUBJECT OF INSTALLED AND OPERATED ELECTRONICAL CONTROLLING  
IN SMK MUHAMMADIYAH 3 YOGYAKARTA**

**ABSTRACT**

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The purpose of this research is to determine the performance and feasibility degree of educational aids in the subject of installed and operated electronically controlling and to know the increasing of students' learning outcomes through cooperative learning strategy on the Competence Expertise Installation of Electric Power Engineering in SMK Muhammadiyah 3 Yogyakarta.

The research can be categorized as Research and Development forwarded to class action (PTK) which carried out in the Power Engineering Installation in SMK Muhammadiyah 3 Yogyakarta. The object was in the form of development of teaching aids in the installing and operating an electronically controlling subject in practicing and lab sheet. Unit practices and laboratory worksheet conducted a validation process and feasible, and then implemented through the class action by cooperative learning strategy of STAD techniques. Methods to collect data were questionnaire and test questions to measure students' learning outcomes.

The experiment result showed that test of learning aids in the installed and operated electrical controlling as a unit practice can be run in accordance with program variation in the worksheet. The result of feasibility test based on an evaluation which is conducted by media expert obtained the average value of 3.18 (very good) with appropriate category. Whereas an evaluation which is conducted by material expert obtained the average value of 3.00 (very good) with feasible category, as for an assessment from teacher obtained the average value 3.19 (very good) with feasible category. Based on the experience through cooperative learning strategy STAD technique, the average value of student's learning outcomes in the first cycle was 13,3 %. In the second cycle the average value of students' learning outcomes was 8,5%. Thus, there is increase in learning achievement from the first cycle to second cycle 7,5 %.

**Keywords:** Electrical Controlling, Cooperative Learning Strategy of STAD Technique